TROUBLE SHOOTING

CAUTION : YOU WILL NEED POWER TO BE ON DURING SOME PHASES OF TESTING. USING PROPER CARE TO AVOID ELECTRICAL SHOCK.

1. TURN OFF POWER SWITCH.
2. CHECK FUSE MARKED F-3. THIS IS A 4amp AGC FUSE. IF FUSE IS BAD REPLACE. IF FUSE IS GOOD, OR BLOWS IMMEDIATELY GO TO NEXT STEP.
3. TRY TO MANUALLY ROTATE ELEVATION. THIS CAN BE DONE BY GRIPPING THE IDLER SPROCKET WITH ADJUSTABLE PLIERS. IF THE SPROCKETS WILL NOT TURN CHECK THAT THE LANDING GEAR IS NOT LOCKED AGAINST THE LOWER ELEVATION BUSHING. CHECK FOR FOREIGN OBJECTS CAUGHT IN THE ELEVATON SCREWS. LOOK FOR METAL PIECES INDICATING A BEARING FAILURE. REPAIR AS NEEDED. IF SPROCKETS TURN, GO TO NEXT STEP.
4. CAUTION! TURN ON POWER SWITCH. CHECK FOR 110 VAC AT THE FOLLOWING LOCATIONS:
   - A. (1) 110V MODELS - ACROSS THE BOTTOM POSTS OF THE MERCURY RELAY.
     (2) 208 - 240V MODELS - ACROSS SECONDARY POSTS OF THE TRANSFORMER.
   - B. INPUT AND OUTPUT OF F - 3 FUSE. USE WHITE WIRE ON THE MERCURY RELAY COIL FOR THE NEUTRAL PICK - UP.
   - C. PIN 1 OF THE J-8 CONNECTOR ON RELAY BOARD. TURN UNIT POWER OFF! IF POWER IS LOST IN LINE, REPLACE OR REPAIR PART AS NEEDED. IF POWER IS GOOD TO RELAY BOARD, GO TO NEXT STEP.
5. UNIT POWER SHOULD BE TURNED OFF. CHECK ALL ELEVATION RELATED WIRING CONNECTIONS. USE THE FOLLOWING AS A GUIDE.
   - A. ELEVATION SWITCHES (3)
   - B. CONNECTIORS AT RELAY BOARD (J-6, J-7, J-8).
   - C. ELEVATION MOTOR CONNECTOR (J-9).
   - D. ELEVATION MOTOR CAPACITOR.

IF CONNECTIONS ARE LOOSE OR BROKEN, REPAIR AS NEEDED. IF CONNECTIONS ARE GOOD GO TO NEXT STEP.

6. CAUTION! TURN UNIT POWER ON. CHECK VOLTAGE AT ELEVATION SENSOR. POWER TO THE SENSOR IS 5.35VDC. INPUT POWER IS MEASURED ACROSS THE RED AND BLACK WIRES, THE RED WIRE IS POSITIVE AND THE BLACK WIRE IS NEGATIVE, VOLTAGE SHOULD MEASURE A CONSTANT 5.35VDC. OUTPUT POWER IS MEASURED ACROSS THE BROWN AND BLACK WIRES, THE BROWN WIRE IS NOW THE POSITIVE LEAD. WHILE MANUALLY ROTATING ELEVATION SPROCKET THE VOLTAGE MEASUREMENT SHOULD ALTERNATE BETWEEN 5VDC AND 0VDC AS SIGNAL IS OPENED AND CLOSED. TURN UNIT POWER OFF!
IF SENSOR IS BAD, REPLACE IT. IF SENSOR FUNCTIONS PROPERLY, GO TO NEXT STEP.

7. CHECK THAT UNIT POWER IS OFF! DISCONNECT P-6 AT J-6 ON THE RELAY BOARD USING TWO (2) JUMPER WIRES, CONNECT ONE LEAD FROM EACH WIRE TO THE POSITIVE (+) SIDE OF THE CAPACITOR MARKED C-1 LOCATED ON THE RELAY BOARD. CAUTION! THE JUMPER WIRES SHOULD HAVE INSULATED CLAMPS.

TURN UNIT POWER SWITCH ON. TO RAISE THE UNIT - CONNECT ONE LEAD FROM C-1 AND JUMPER TO THE CATHODE SIDE OF THE DIODE MARKED CR-6. (THE CATHODE SIDE OF THE DIODE HAS A BLACK RING WITH A CORRESPONDING SHADE ON THE CIRCUIT BOARD.)
THE RELAY MARKED K-6 SHOULD ' CLICK ' IN, BUT THE UNIT SHOULD NOT MOVE AT THIS TIME. CONNECT A SECOND JUMPER FROM +C-1 TO THE CATHODE SIDE OF THE DIODE MARKED CR-5. WHEN CONNECTED, RELAY K-5 SHOULD ' CLICK ' IN AND UNIT SHOULD ELEVATE DOWN.
TO RAISE THE UNIT, REMOVE THE JUMPER FROM CR-6 AND THE TREADMILL WILL BEGIN TO ELEVATE.

IF UNIT OPERATES CORRECTLY, CHECK THE CONTROL CABLE FROM RELAY BOARD TO CONTROL BOX. REPLACE OR REPAIR AS NEEDED.

IF THE RELAYS DO NOT ' CLICK ' IN, REPLACE THE RELAY AND DIODE IF NEEDED.

IF THE RELAYS DO ' CLICK ' IN BUT UNIT DOES NOT FUNCTION, TURN UNIT POWER OFF, CONNECT P-6 INTO J-6 ON THE RELAY BOARD AND GO TO NEXT STEP.

8. DISCONNECT MOTOR LEAD CONNECTOR J-9. CAUTION! TURN UNIT POWER ON. SET ELEVATION FOR 10% INCLINE. CHECK FOR 110VAC ACROSS PINS 3 & 2 AT J-9. IF VOLTAGE IS CORRECT, CHECK ELEVATION CAPACITOR FOR CORRECT LEVEL OF CAPACITANCE. REPLACE MOTOR OR CAPACITOR AS NEEDED. IF VOLTAGE IS NOT PRESENT GO TO NEXT STEP.
9. IF ELEVATION RELAYS K-5 AND K-6 DID NOT ' CLICK ' IN, REPLACE OR REPAIR CONTROL SYSTEM AS NEEDED. IF RELAYS DID ' CLICK ' IN, CHECK VOLTAGE ON INPUT AND OUTPUT LEGS OF THE MAXIMUM ELEVATION SWITCH. THIS IS THE SWITCH WITH THE BLUE WIRES. SWITCH SHOULD BE WIRED FOR NORMALLY CLOSED OPERATION. REPLACE AS NEEDED.

UNIT STUCK IN ELEVATION

1. TURN OFF POWER SWITCH.
2. CHECK FUSE MARKED F-3. THIS IS A 4amp AGC FUSE. IF FUSE IS BAD REPLACE IT. IF FUSE IS GOOD, OR BLOWS IMMEDIATELY GO TO NEXT STEP.
3. (REFER TO STEPS 3 - 6 OF SECTION: UNIT WILL NOT ELEVATE.)
4. TURN OFF POWER SWITCH. DISCONNECT P-6 AT J-6 ON RELAY BOARD. USING ONE (1) JUMPER WIRE WITH INSULATED CLAMPS, ATTACH ONE END TO THE POSITIVE (+) SIDE OF THE CAPACITOR MARKED C-1 ON THE RELAY BOARD. ATTACH THE OTHER END TO THE CATHODE SIDE OF THE DIODE MARKED CR-5. (NOTE: THE CATHODE SIDE HAS A BLACK RING WITH A CORRESPONDING SHADE ON THE CIRCUIT BOARD.) ATTACH A SECOND LIKE JUMPER WIRE TO THE POSITIVE SIDE OF THE CAPACITOR MARKED C-1, AND THEN ATTACH THE OTHER END OF THIS WIRE TO THE CATHODE SIDE OF THE DIODE MARKED CR-6. TURN ON THE POWER SWITCH. THE UNIT SHOULD NOW LOWER THE ELEVATION.

IF ONE OR BOTH RELAYS DID NOT ' CLICK ' IN WHEN POWER WAS TURNED ON REPLACE THE RELAY AND DIODE AS NEEDED.

IF THE RELAYS DID ' CLICK ' IN GO TO THE NEXT STEP.

5. CAUTION ! POWER IS STILL ON AT THIS TIME. DISCONNECT MOTOR LEAD CONNECTOR J-9. WITH THE JUMPER WIRES STILL ATTACHED, CHECK FOR 110VAC ACROSS PINS 1 & 3 AT J-9. IF THE VOLTAGE IS CORRECT, TURN OFF THE POWER SWITCH AND CHECK THE ELEVATION CAPACITOR FOR THE CORRECT LEVEL OF CAPACITANCE. REPLACE THE CAPACITOR OR MOTOR AS NEEDED. IF VOLTAGE IS NOT PRESENT, GO TO THE NEXT STEP.

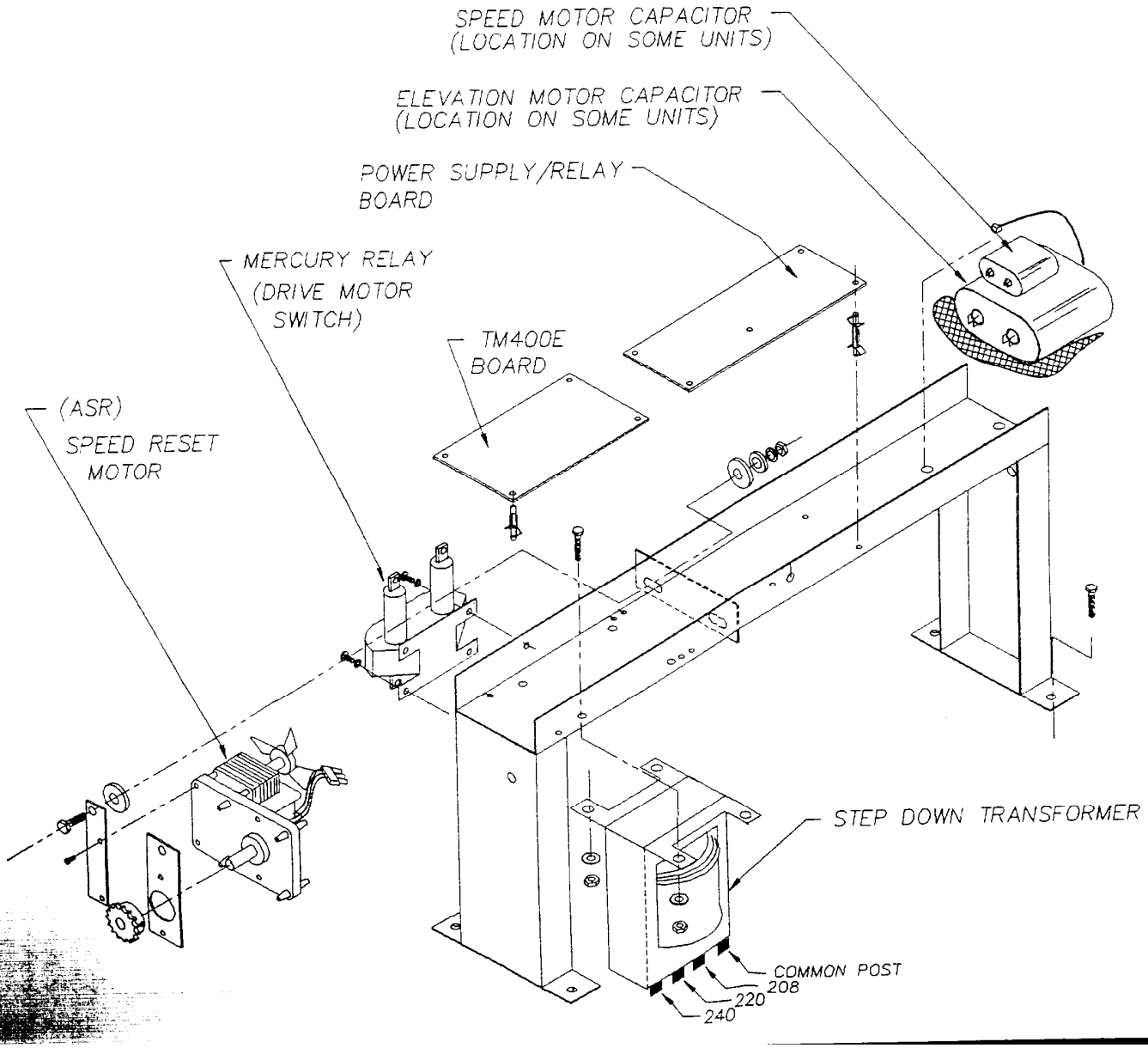
6. CAUTION! UNIT POWER SHOULD BE ON FOR THIS TEST. WITH JUMPER WIRES STILL ATTACHED, CHECK THE VOLTAGE ON THE INPUT AND OUTPUT LEGS OF THE MINIMUM ELEVATION LIMIT SWITCH. THIS IS THE SWITCH WITH THE RED WIRES. SWITCH SHOULD BE WIRED FOR NORMALLY CLOSED OPERATION. REPLACE AS NEEDED.

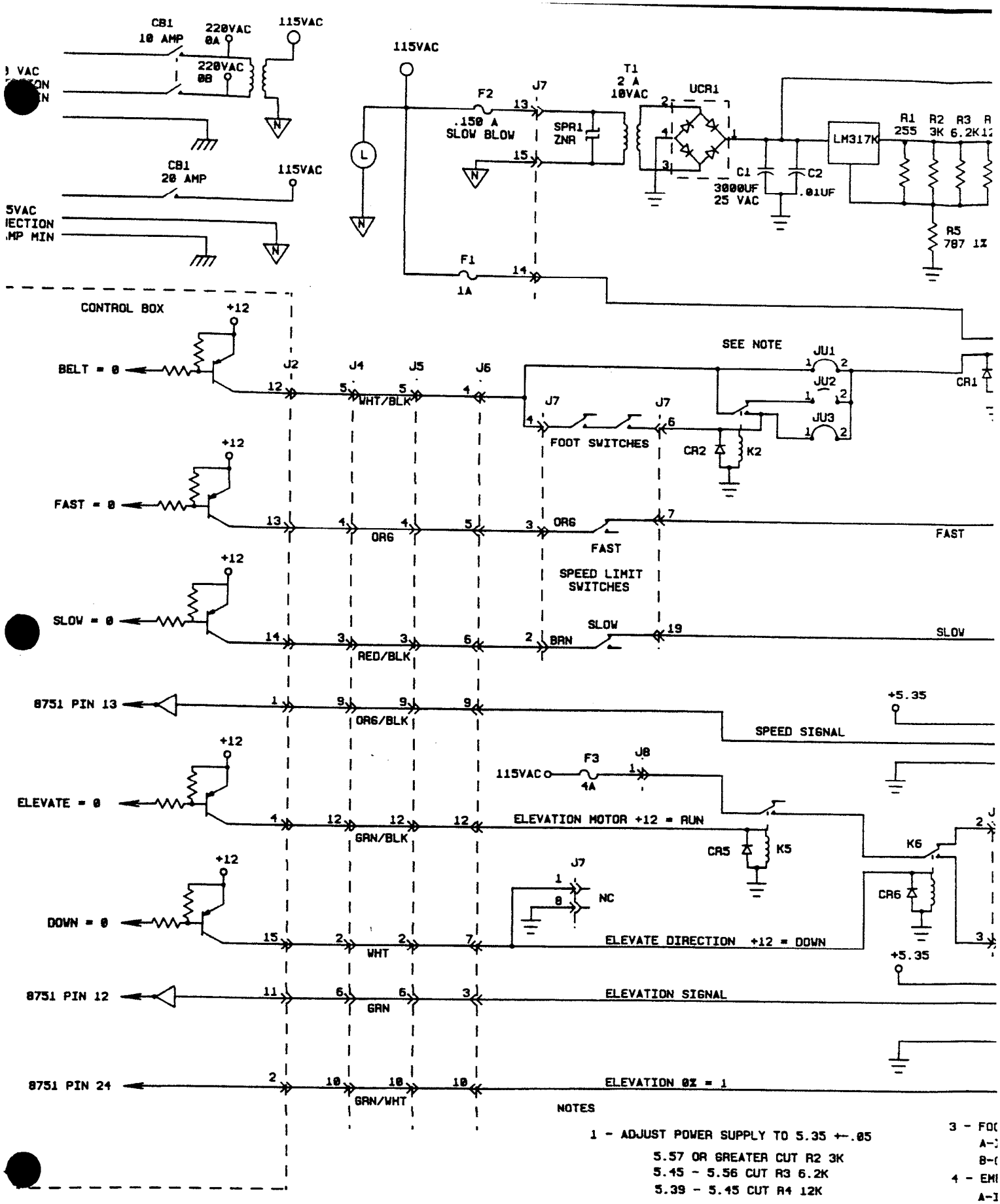
TREADMILL WILL NOT START 38

CAUTION: UNIT POWER WILL BE ON DURING SOME PHASES OF TESTING. USE PORPER CARE TO AVOID ELECTRICAL SHOCK.

1. IS SAFETY MAGNET IN PLACE? IF YES GO TO NEXT STEP.
2. IS SERVICE LIGHT ON OR FLASHING? IF YES CHECK DIAGNOSTICS ON CONTROL. CHECK THE OWNERS MANUAL FOR MORE DETAILED INFORMATION. IF NO GO TO NEXT STEP.
3. TURN UNIT POWER OFF! UNPLUG UNIT FROM WALL OUTLET. REMOVE THE TREADMILL HOOD FROM THE UNIT.
4. WITH THE UNIT UNPLUGGED, CHECK THE FOLLOWING COMPONENTS AND CONNECTIONS:
   - A. PUSH IN THE MOTOR RESET BUTTON.
   - B. CHECK THE DRIVE MOTOR WIRES LOCATED UNDER THE WIRING ACCESS PANEL.
   - C. CHECK THE FUSE MARKED F - 1. THIS IS A 1amp AGC FUSE.
   - D. CHECK THE SPEED LIMIT SWITCH CONNECTIONS. MAXIMUM SPEED SWITCH SHUT OFF SWITCH (ORANGE WIRES) AND MINIMUM SPEED SWITCH SHUT OFF SWITCH (BROWN WIRES) SHOULD BE WIRED NORMALLY CLOSED. THE SPEED RESET SWITCH (VIOLET WIRES) SHOULD BE WIRED NORMALLY OPEN.
   - E. CHECK THE EMERGENCY STOP BUTTON IF APPLICABLE. THE BUTTON SHOULD NOT BE DEPRESSED.
   - F. CHECK CONTROL AND/OR EMERGENCY STOP CABLE FOR DAMAGE WHERE THEY ENTER THE UNIT CHANNEL FROM THE HANDLE BAR.
   - G. CHECK WIRE CONNECTIONS AT:
     - (1) J-6 & J-7 ON RELAY BOARD.
     - (2) MERCURY RELAY LEGS AND COIL
     - (3) F-1 FUSE HOLDER
     - (4) SPEED CHANGE MOTOR AND SPEED RESET MOTOR
     - (5) 4uf CAPACITOR (SMALL CAPACITOR WITH BLUE WIRES)

5. CAUTION! THE FOLLWING TESTS WILL REQUIRE THE UNIT POWER TO BE TURNED ON. PLUG THE UNIT INTO THE WALL OUTLET. TURN POWER SWITCH ON. WILL UNIT START? IF NOT, GO TO NEXT STEP.
6. CHECK FOR PROPER VOLTAGE COMING INTO UNIT. PERFORM THIS CHECK AT THE BOTTOM POSTS OF THE MERCURY RELAY. (NOTE: IF UNIT IS 208-240 VOLT MODEL CHECK POWER ON THE PRIMARY POSTS OF THE INTERNAL TRANSFORMER AND CHECK FOR 110 VOLTS ON THE SECONDARY POSTS OF THE TRANSFORMER.) IF INCOMING POWER IS CORRECT, GO TO NEXT STEP.
7. CHECK FOR 110VAC ON THE INPUT AND OUTPUT POSTS OF FUSE HOLDER F-1. IF CORRECT VOLTAGE IS NOT PRESENT, REPLACE OR REPAIR PROBLEM AREA AS NEEDED. IF CORRECT VOLTAGE IS PRESENT GO TO NEXT STEP.
8. CHECK DC VOLTAGE ACROSS CAPACITOR C-1 ON RELAY BOARD. IF NO VOLTAGE IS PRESENT REPLACE TRANSFORMER T-1 OR BRIDGE RECTIFIER UCR-1 AS NEEDED. IF AROUND 13VDC IS PRESENT, GO TO NEXT STEP.
9. PRESS AND HOLD START BUTTON ON CONTROLLER FOR THREE BEEPS. CHECK VOLTAGE ACROSS MERCURY RELAY COIL. THIS IS CHECKED ACROSS THE VIOLET AND WHITE WIRES. IF 110 VAC IS PRESENT AT COIL, CHECK VOLTAGE ACROSS THE TOP POSTS OF THE MERCURY RELAY. SHOULD BE 110, (220), VOLTS AC AS REQUIRED BY THE UNIT. IF NO VOLTAGE IS READING, REPLACE THE MERCURY RELAY. IF THERE IS NO VOLTAGE AT THE MERCURY RELAY COIL, TURN OFF THE UNIT POWER. GO TO NEXT STEP.
10. DISCONNECT CONNECTOR P-6 FROM THE RELAY BOARD AT J-6. CONNECT A WIRE FROM THE POSITIVE SIDE (+) OF THE CAPACITOR C-1 TO THE CATHODE SIDE (HAS BLACK RING WITH CORRESPONDING SHADE ON THE RELAY BOARD.), OF DIODE CR-1. WHEN POWER IS TRUNED ON THE UNIT SHOULD START. IF UNIT DOES NOT START, DID RELAY K-1 'CLICK' IN? YES - CHECK WIRING TO MERCURY RELAY. NO - VERIFY THAT THE LOW LIMIT SWITHCES ARE ACTIVATED, REPLACE K-1 RELAY AND CR-1 DIODE OR LIMIT SWITCHES AS NEEDED.
11. IF UNIT OPERATES CORRECTLY AT RELAY BOARD. REPAIR OR REPLACE THE CONTROL CABLE OR CONTROL BOX AS NEEDED. IF UNIT DOES NOT FUNCTION CORRECTLY AT THE RELAY BOARD. REPAIR OR REPLACE THE RELAY BOARD OR WIRING AS NEEDED.


SPEED MOTOR CAPACITOR
(LOCATION ON SOME UNITS)
ELEVATION MOTOR CAPACITOR
(LOCATION ON SOME UNITS)
POWER SUPPLY/RELAY
BOARD
MERCURY RELAY
(DRIVE MOTOR
SWITCH)
TM400E
BOARD
(ASR)
SPEED RESET
MOTOR
STEP DOWN TRANSFORMER
COMMON POST
208
220
240



NOTES

1 - ADJUST POWER SUPPLY TO 5.35 +-.05

5.57 OR GREATER CUT R2 3K

5.45 - 5.56 CUT R3 6.2K

5.39 - 5.45 CUT R4 12K

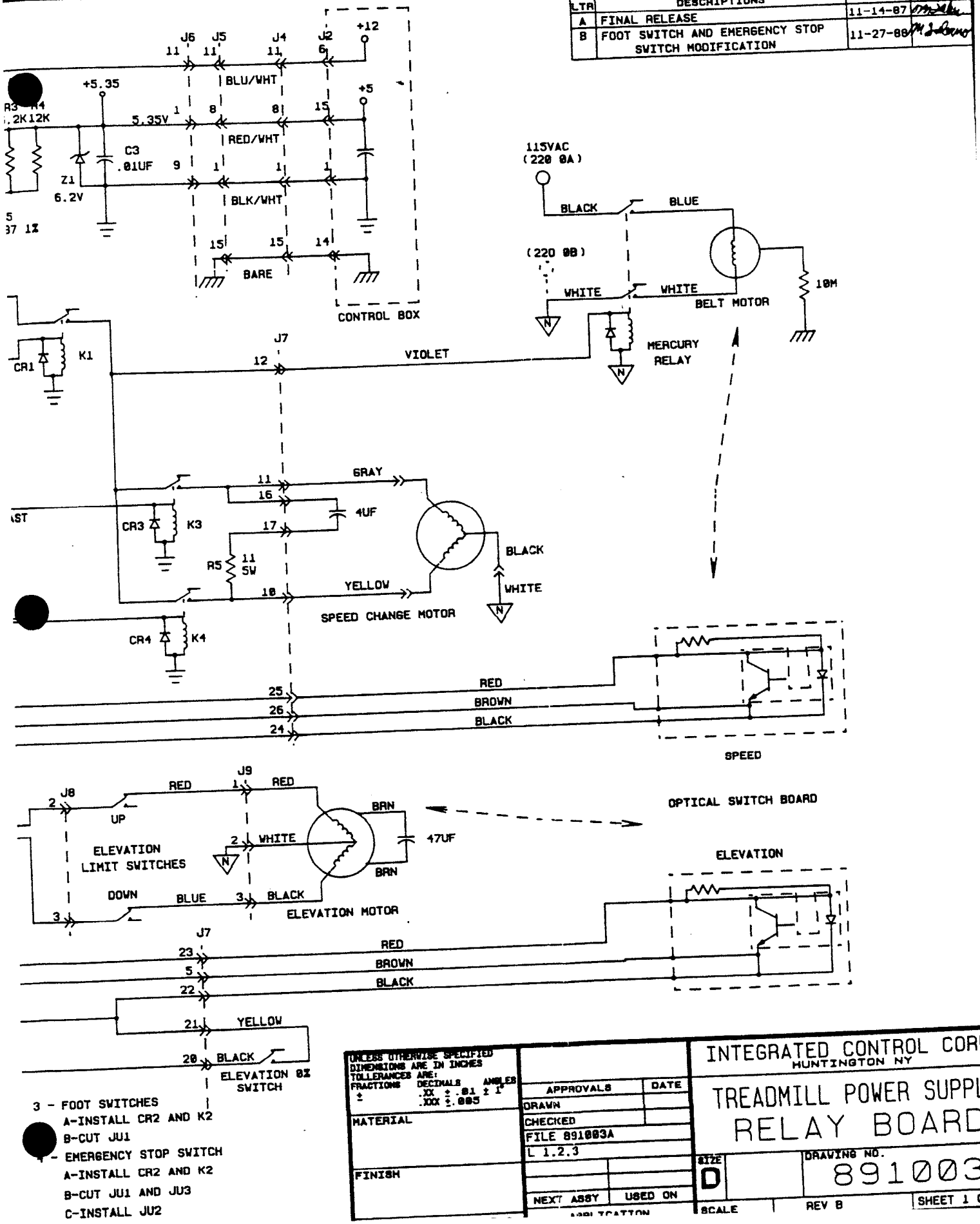
2 - ALL UNMARKED DIODES 1N4148A.

3 - FOO
A-
B-

4 - EMI
A-
B-
C-

NON-A/R TM-1E,203D

REVISIONS			
LTR	DESCRIPTIONS	DATE	APPROVED
A	FINAL RELEASE	11-14-87	
B	FOOT SWITCH AND EMERGENCY STOP SWITCH MODIFICATION	11-27-88	



3 - FOOT SWITCHES
A-INSTALL CR2 AND K2
B-CUT JU1

4 - EMERGENCY STOP SWITCH
A-INSTALL CR2 AND K2
B-CUT JU1 AND JU3
C-INSTALL JU2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ± DECIMALS .XX ± .01 ANGLES ± 1° .XXX ± .005	APPROVALS	DATE
MATERIAL	DRAWN	
	CHECKED	
	FILE 891003A	
	L 1.2.3	
FINISH	NEXT ASSY	USED ON

INTEGRATED CONTROL CORP
HUNTINGTON NY

TREADMILL POWER SUPPL
RELAY BOARD

SIZE D | DRAWING NO. 891003 | SCALE | REV B | SHEET 1 OF